

Appln No. 09/825,599

Amdt date March 1, 2005

Reply to Office action of December 3, 2004

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A method of optimizing signal transformation from a twisted pair transmission line to a combination transmitter and receiver for a frame-based communications network, the transmitter having a transmit output pair port for transmitting signals onto the frame-based communications network over the twisted pair transmission line, the receiver having a receive input pair port for receiving signals from the frame-based communications network over the twisted pair transmission line, comprising:

coupling a transformer between the twisted pair transmission line and each of the transmit output pair port and the receive input pair port, the transformer having a coil across the twisted pair, a transmit coil across the transmit output pair port, and a receive coil across the receive input pair port, wherein a transfer ratio between the transmit coil and the coil across the twisted pair is optimized for transmitting signals and a transfer ratio between the receive coil and the coil across the twisted pair is optimized for receiving signals,

wherein the transfer ratio between the transmit coil and the coil across the twisted pair and the transfer ratio between the receive coil and the coil across the twisted pair are optimized by optimizing transmit coil to coil across the twisted

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pair turns ratio and receive coil to coil across the twisted pair turns ratio to maximize respective transmit path and receive path signal to noise ratios.

2. (Canceled)

3. (Original) The method of Claim 1, wherein the twisted pair transmission line is a telephone line having a tip line and a ring line.

4. (Currently Amended) The method of Claim 1, wherein the transmit coil to coil across the twisted pair turns ratio is designated  $w_t:1$  and the receive coil to coil across the twisted pair turns ratio is designated  $w_r:1$ , such that a  $w_r:w_t$  ratio includes ~~the range~~ a range from 1 to 4.

5. (Currently Amended) A transformer apparatus for optimizing signal transformation from a twisted pair transmission line to a combination transmitter and receiver for a frame-based communications network, the transmitter having a transmit output pair port for transmitting signals onto the frame-based communications network over the twisted pair transmission line, the receiver having a receive input pair port for receiving signals from the frame-based communications network over the twisted pair transmission line, comprising:

a plurality of transformer coils coupled between the twisted pair transmission line and each of the transmit output pair port and the receive input pair port, the plurality of

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transformer coils including a coil across the twisted pair, a transmit coil across the transmit output pair port, and a receive coil across the receive input pair port, wherein a transfer ratio between the transmit coil and the coil across the twisted pair is optimized for transmitting signals and a transfer ratio between the receive coil and the coil across the twisted pair is optimized for receiving signals, wherein the transfer ratio between the transmit coil and the coil across the twisted pair and the transfer ratio between the receive coil and the coil across the twisted pair are optimized by optimizing transmit coil to coil across the twisted pair turns ratio and receive coil to coil across the twisted pair turns ratio to maximize respective transmit path and receive path signal to noise ratios.

6. (Canceled)

7. (Original) The transformer apparatus of Claim 5, wherein the twisted pair transmission line is a telephone line having a tip line and a ring line.

8. (Currently Amended) The transformer apparatus of Claim 5, wherein the transmit coil to coil across the twisted pair turns ratio is designated wt:1 and the receive coil to coil across the twisted pair turns ratio is designated wr:1, such that a wr:wt ratio includes ~~the range~~ a range from 1 to 4.